ASSOCIATION BETWEEN DISEASE ACTIVITY AND CHANGES IN FIBROSIS-4 INDEX LEVEL IN PATIENTS WITH RHEUMATOID ARTHRITIS TREATED WITH METHOTREXATE FOR A SHORT PERIOD

Keywords: Rheumatoid arthritis, Comorbidities, Autoantibodies
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Background: Liver fibrosis and liver damage are major concerns associated with long-term side effects in patients with rheumatoid arthritis (RA) treated with methotrexate (MTX). Recently, fibrosis-4 index (FIB-4) has often been used as an indicator of liver fibrosis. However, most studies examining the association between MTX and liver fibrosis, including FIB-4, have involved patients with RA treated with MTX for an extended period. To the best of our knowledge, no study has reported associations between FIB-4 and disease activity in patients with RA after using MTX for a short period.

Objectives: We focused on FIB-4 as an indicator of liver fibrosis in patients with RA treated with MTX in phase I and aimed to evaluate the changes in FIB-4 level in these patients for a short period.

Methods: Patients diagnosed with RA at our hospital and who had not received MTX before diagnosis (using the 2010 ACR/EULAR criteria) were included. Patients with hepatitis virus infection, alcoholism, or severe obesity were excluded from the study. Patients unable to continue using MTX for more than 12 months and those who used a maximum dose of MTX of 10 mg/week or less during the observation period were excluded. Patients’ clinical and functional data were recorded at baseline and at all subsequent visits (6 and 12 months). We used the Mann–Whitney U test to compare aspartate transaminase (AST), alanine aminotransferase (ALT), and FIB-4 levels between the baseline and each observation period. Multiple regression analysis was performed to examine the effect of the cumulative MTX dose on the changes in FIB-4 levels from baseline to 6 and 12 months, after adjusting for factors involved in RA.

Results: A total of 144 patients were examined. The median FIB-4 levels increased from baseline to 6 and 12 months (p <.001). Multiple regression analysis revealed that the cumulative MTX dose did not affect the changes in FIB-4 levels. Therefore, by predicting factors other than the cumulative MTX dose for changes in FIB-4 levels from baseline, we performed multiple linear regression analysis, after adjusting for sex, body mass index (BMI), CRP, MMP-3, mHAQ, RF, ACPA, DAS28ESR, and FIB-4 level at baseline, defining the changes in FIB-4 level from baseline as the dependent variable. The factors independently influencing the changes in FIB-4 level were DAS28ESR (β = 0.107) at 6 months and DAS28ESR (β = 0.086) at 12 months. DAS28ESR at baseline affected the changes in FIB-4 level from baseline to both observation periods. There was also a significant correlation between the change in FIB-4 from baseline to each period and the DAS28ESR (p <.001). Further, a mediation analysis was performed for the association between DAS28ESR and the changes in FIB-4 level, considering the cumulative MTX dose as a mediator. The results indicated that the cumulative MTX dose did not mediate the relationship between DAS28ESR at baseline and the changes in FIB-4 level at each observation period.

Conclusion: The cumulative MTX dose did not affect the changes in FIB-4 level over a short period. In contrast, disease activity in patients with RA before MTX administration showed an effect on the changes in FIB-4 level. Clinicians should be more careful regarding liver fibrosis after MTX administration when treating patients with higher disease activity before treatment.

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UNDERSTANDING DISEASE PREVALENCE AND COMORBIDITY PROFILES AMONG SEROPOSITIVE AND SERONEGATIVE RHEUMATOID ARTHRITIS PATIENTS IN PUERTO RICO

Keywords: Rheumatoid arthritis, Comorbidities, Autoantibodies
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Background: Prevalence of rheumatoid factor (RF) and/or anti-c cyclic- citrullinated peptide antibody (ACPA) positivity in US patients with rheumatoid arthritis (RA) is around 70% [1]. Seropositive RA status, defined by positivity for RF and/or ACPA, is associated with poor disease prognosis [2]. Little is known about the prevalence of RA, percentages of seropositive RA versus seronegative RA, and the comorbidity profile and infections of these patients in Puerto Rico (PR).

Objectives: To estimate the prevalence of seropositive and seronegative RA in PR and to understand the demographic and clinical characteristics among patients with seropositive versus seronegative RA.

Methods: This was a descriptive retrospective observational cohort study using MerativeSM MarketScan® claims database. To examine RA prevalence, eligible Puerto Rican adult patients were required to have ≥6 months of continuous enrolment (CE) from October 1, 2016, through April 30, 2021 (index period), have ≥3 visits with RA diagnosis codes (ICD-10-CM M05 or M06, ignoring M06.1 and M06.4, with ≥2 claims with RA diagnoses occurring between 7 and 365 days of one another). Those patients with ≥1 M05 diagnosis code during the index period were categorized into the seropositive cohort (SP), the index date is the date of the first M05 diagnosis during the index period, otherwise, they were classified into the seronegative cohort (SN), the index date was the date of first an M06 (excluding M06.1 and M06.4). Patients with RA diagnosis in the baseline period were excluded. To assess comorbidity profile and infections, the eligible patients were also required to have ≥12 months CE prior to index date. The demographic, clinical characteristics, and infections were assessed during 12 months prior to the index date (baseline period), and standardized differences were estimated. The crude incidence rate (total new cases/100 person-year) of comorbid conditions and infections were estimated during the follow-up period.

Results: The prevalence of RA among Puerto Ricans was 1.03%. Of 141 patients with RA, 66.7% of them were seropositive. Within eligible seropositive (n=53) and seronegative (n=42) RA patients for the evaluation of comorbidities and infections, the mean (SD) of age were 50.75±12.93 and 49.36±11.22 years (d = 0.11), respectively. Most patients were females (79.25% for SP vs 71.43% for SN, d=0.18) and had commercial insurance (92.45% for SP vs 97.62% for SN, d=0.24). The mean (SD) of Charlson Comorbidity Index scores were 0.79±1.17 vs 0.64±1.01 (d=0.14) for seropositive and seronegative respectively. For both seropositive and seronegative cohorts, the most prevalent comorbidities were hyperlipidemia (37.74% vs 30.95%, d=0.14), hypertension (33.96% vs 66.67%, d=0.69) and Type II diabetes (24.33% vs 21.43%, d=0.07) respectively. The most frequent infections were those happening in the urinary tract (18.87% for SP vs 14.29% for SN, d=0.12). In the follow-up period, the crude IR/100-person year were 79.34 and 33.45 for hyperlipidemia; 42.74 and 32.46 for T2DM; 274.77 and 29.46 for hypertension, and 19.93 vs 25.00 for urinary tract infection for seropositive and seronegative RA cohorts, respectively.

Conclusion: This study found that the prevalence of RA among Puerto Ricans was similar to that reported in US mainland, with most (56.7%) presenting seropositive RA. We also observed a substantial burden of comorbidities among both seropositive and seronegative RA patients. Future studies with a large sample size are warranted.

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